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FOOD FOR THOUGHT.

How far thought is affected by food, is Food for Thought. What impoverished, over-stimulated, or beclouded brains, an indulgence in too spare or too liberal a diet may produce, is a question of no small importance. Without expressing any opinion as to the use or abuse of alcoholic drinks—or even conceding, wholly, Samuel Taylor Coleridge's dictum, that only a pure mind can relish apple dumplings—we feel but little doubt that Coleridge himself would scarcely have merited his friend's description of him as a 'damaged archangel' but for his over-indulgence in a brain-beclouding drug. Milk is for babes, and strong meat for those who can digest it; but a man who takes a drug for his friend often entertains a demon unawares, who may any day desert him, and mock the double dose that only brings twice-cursed discomfort. But, argues the man, life is not worth living without this or that pet indulgence. This is the old story of the struggle, the temptation, and the yielding—of Faust and Mephistopheles. 'You are sleepless—in pain, grief, loneliness, or any other affliction; take me and I will give you rest—make your life bearable at least,' avers the patented poison, cunningly disguised perhaps as a much testimonialised medicine. And lulled by the apparent relief, the temporary forgetfulness, the victim hugs and praises the traitor to whom he has given admission.

This remedy, this panacea, will last his lifetime—so he fancies. But no such thing. In the hour of his utmost need, when sickness or sorrow has newly shaken his constitution, suddenly and without warning the dose has lost its cunning power to soothe or stupefy; it will neither ward off nor sweeten painful hours again.

And now begins a conflict dreadful to witness, horrible to endure—an inevitable time of woe, compared with which, the man's state, when he ignorantly said life was not worth living without his darling indulgence, was, as he now remorsefully owns, a paradise. He thought to indulge, and die—but as a matter of fact there are years

of painful life, with ruined digestion, irritable nerves, sleepless eyes, between him and dissolution. Retribution—so inexorable a law in all Nature's dealings with man—sums up painfully, slowly, hourly, day by day, every wrong he has inflicted on the machine she entrusted to him; wrongs inflicted ignorantly or wilfully; it makes no difference physically, however much it may morally; a final account has to be given of all his doings.

But it is not merely self-inflicted torments we have to reckon with: the British householder has his every day's dinner to digest—if he can. In temperate-climed Britain we have not to dread the rash humour, produced by the pungent pickles and brandy pawnee in the brain of the Anglo-Indian; nor the affected indifference and faded sneer of the habitual absinthe toper; nor the dyspepsia resulting from the iced water and semipiternal pie of our American cousins. Although every housekeeper knows the ease with which a pie can be concocted, and how 'satisfying' it is, we have so far profited by lessons on health and cookery as nearly to have banished from our tables that awful 'resurrection pie' of our school-tide, in which did not disdain to reappear every bone that had figured on the table during the week—not even excepting the 'whiskers' of the harmless necessary herring. But if this horror of a pie has vanished, our cold domestic mutton, or still more unalluring 'hash,' remains behind. The viands which a stuffy used-up atmosphere has ill prepared the appetite and faded eyes of a sedentary worker to regard with relish, would appear, as we all know, in a very different light if spread on the table of a country inn, and encountered after a fast of five hours, with eyes brightened and lungs cleared by ten miles of rough walking over heath or moor.

The indoor worker is as hungry—as much in need of sustenance as the outdoor; he may be no more dainty or self-indulgent than his more fortunate compeer; but as he brings but a languid appetite to his cold mutton, so he probably carries from it an uneasy digestion that calls—or he

fancies that it does—for some cordial corrective to give tone and zest to what he has half-mechanically swallowed. Meanwhile, in the case of the open-air diner, digestion follows without the need of recourse to any stimulant beyond the primeval sauce of hunger which he has brought to his repast. That there is a subtle and intimate correlation between food and brain, all pathologists agree. Without being materialists, or seeking to trace all mental effects to mere physical action and reaction, we yet regard it of the greatest consequence that the vehicle of thought should be nourished and invigorated by the food, so that a man may think his thoughts with all the keenness and perspicacity of which nature has rendered him capable. That men of genius have done much, often with small means and appliances, is no proof that they might not have done more had their environments been more propitious. Granting a preponderating influence to original or inherited temperament—a temperament, however, susceptible of daily alteration—improvement, or the reverse—every meal demands a certain amount of importance. This may be seen especially in the case of growing lads whose appetites are of the keenest. Some happy temperaments there are which feel neither disappointment nor disgust at the aspect of the typical cold mutton; but these are not common; and as a state of temper always renders digestion difficult, the failure to provide an appetising as well as a merely wholesome meal may have far-reaching consequences.

Do our readers remember the exquisitely humorous look of affected recollection which paterfamilias assumes in one of John Leech's sketches, when, leaving the house, he pauses at the hall door, and learns the *menu* for the day from the neat little parlour-maid? Then comes the sudden remembrance of an engagement that will keep him from home beyond the dinner hour, and the message to the mistress on no account to wait dinner for him! We can all imagine the secret glee with which he will order and the gusto with which he will absorb his own especially soothing dish at his club; while the lady of his hearth and home is dispersing the domestic cold mutton among the children and servants. He will return home, we foresee, good-tempered, well nourished, generously inclined even, possibly with some little gift in hand for the wife of whose company he has deprived himself out of pure regard for his own digestion and her feelings.

If Shakespeare's Adam was justified in attributing his frosty but kindly old age to his abstinence from 'hot and rebellious liquors' in his youth, how many men and women may owe an old age of dyspepsia, unkindly and frosty, to a blighting unwholesome diet in their youth! We know how attractive to young and innocent palates is pastry in all its various shapes and forms; how repugnant to palates on which the mother's milk is scarce dry is meat—underdone, fat meat, 'juicy' chops and steaks! But it is not the young alone who cling to puff paste and short crust; their elders, careless and fearless, will also commit similar excesses until arrested by the pangs of dyspepsia.

Grumio denied mustard to his mistress on the ground that it was too hot for her temperament. But he also denied to her, as quite inadmissible, beef without that choleric condiment. It was, we believe, the elder Mathews, who, watching a traveller dining at an inn upon beefsteak and neglecting to help himself to mustard, first gently pointed out to him the omission, and then, shocked and outraged at the diner's culpable and continued indifference on so vital a point, ended by himself putting mustard on the edge of the recalcitrant feeder's plate, in hopes of coaxing or coercing him into orthodoxy.

In one of his amusing paradoxes, Mr Ruskin advises a young man to be first happy, and then useful afterwards; since by being happy he would prove that he was, or was doing, that which Providence intended him to be, or do. May we argue in like manner that we do well to feed on that which likes us, since the pleasure to our palate proves we are eating what nature intended us to eat? That this doctrine has its practical limitations is obvious at a glance—a glance, we mean, at the countenances of those who, following strictly, if unconsciously, the moralist's advice, seek first to gratify their tastes without paying much regard to the usefulness of their diet for health and strength. Experience must decide here, as elsewhere, what amount of indulgence we may harmlessly accord to the preferences which nature has implanted in us—no less than in the cream- and fish-loving cat, the honey-loving bear, the salt-desiring reindeer. Preferences, due in the first instance, perhaps, to necessity or accident, become riveted on races as on individuals by custom and inheritance. Thus, the Chinaman yields to a craving for opium; and the tea-plant helps to moderate the potations which were the disgrace of an earlier part of this century. Fashion goes for a good deal in eating and drinking, as well as clothing; and those who, out of regard for their brains, prefer to keep themselves well nourished, not by high but by good living, rather 'than paint their outward walls so costly gay,' and suffer death within, have the satisfaction of knowing by experience that they have enabled the machine to do the best work its nature allows of—have given it power to grasp and retain those thoughts and ideas which are, we humbly hope, to have a longer lease than the fading mansion in which they have been temporarily enshrined.

THE BURDEN OF ISABEL.*

CHAPTER XII.—A PRODIGAL FATHER.

DOWN the noisome lane, or alley, Isabel and Mr Doughty passed in the rear of the policeman. It was so narrow and so dark that they thought it well to keep in the middle of the way; and yet they scarce avoided contact with dingy figures that flitted past them in and out of gaping doorways, and with children that squalled and scrambled in the gutters; for in that dreadful region night and day were confounded even for the youngest. At the end of the alley was a dark little square, and to a tumble-down house at the farther side the policeman led, and they followed. The door-

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way was below the level of the street, and was approached by a flight of half-a-dozen steps, worn very much away by the tread and scuffle of countless feet. Into this den or cave they descended; and now at a suggestion Isabel would have turned back, for these squalid surroundings had dispelled the romance of opium-smoking, and the horrid expectation of what she might see oppressed and terrified her. But neither of her companions said a word, and she went on with them as if without hesitation—on to a door on one side of the dark passage, above which hung a small paraffin lamp, smoking and stinking. The policeman lifted the latch and opened the door, and then stood aside for the others to enter. Isabel drew back.

'I think,' said she, 'I will wait here.'

'I will go in,' said Mr Doughty, 'and find him, and discover what there is to pay.'

He entered, and Isabel and the policeman remained together by the door. They had a full view of the long low room, the atmosphere of which was thick with the brown and sickly opium smoke. A heavy silence prevailed, but yet Isabel was instinctively aware that there were many men in the awful place. No lamp illuminated the gloom—nothing save a lurid glow proceeding from a raised brazier of charcoal at the farther end, and points of light here and there, which were alternately bright and dull, and which when bright made little halos in the dense, smoky atmosphere. As her eyes became used to the peculiar gloom she made out wooden bunks ranged above each other against the wall, like the berths of a ship, and in the bunks she dimly descried strange figures disposed fantastically as on beds of languid torture. Now and then she heard murmurs of uncouth speech, which rose heavily from the silence, and slowly sank back into silence again.

Meanwhile Mr Doughty had made his way down the den. He was met midway by a bowing and gesticulating Chinaman, to whom he seemed to explain his purpose, and with whom he moved towards the brazier. There they stopped, looming large and shadowy against it; after a moment or two the Chinaman returned alone down the room. Then it seemed to Isabel as if a face sprang out of the darkness around the brazier. Close against it, steeped in the glow of the charcoal, she saw the grizzled head of a man with thin nose and lank, close-shaven jaw; the man sat with his chin in his hands gazing into the fire, but presently he raised his head with his face half-turned towards the door to look at Mr Doughty, who stood on the other side of the brazier, and then Isabel's heart rose and sank, for she was sure she saw her father. At that moment the Chinaman appeared through the haze immediately before her. He bowed, and he smiled with an expansive, all-embracing friendliness; but there was an expression in his slanting eyes which made Isabel shudder.

'It is my own fault,' she said to herself: 'I should not have come here.'

The policeman, however, came to her relief. 'Quick, Johnny, quick,' said he; and the Chinaman turned away, smiling and bowing still, and moved noiselessly back to the brazier.

In a moment or two Mr Doughty came back, and said the Chinaman's demand was for so much—naming a sum which seemed extravagant even for three days' unremitting consumption of his seductive poison—but that, with Miss Raynor's permission, he would give him so much less.

'Give him what he asks for,' said Isabel, putting her purse into Mr Doughty's hand, 'and let us get away.'

Mr Doughty's look of mingled surprise and conscious worth at having untold money entrusted to him was good to see. 'I will accomplish,' said he, 'the business with expedition.'

He hurried away; and soon returned, leading by the arm a lean, haggard man, with hair and dress disordered and creased, pale with the pasty pallor of the Chinaman, loose-lipped, and with every nerve twitching in reaction from the prolonged effect of the drug. He seemed but half-conscious, and he walked sadly and shamblingly with his eyes on the ground.

Isabel leaned back, as if she would faint, against the door-post. She experienced such bitter disappointment and piercing of heart as she had never before known. Was this pitiable creature her father?—whom she had dreamed of comforting and cheering, and upon whom she had been ready to pour out all her affection? Did he know that his daughter was there, waiting for him?—the girl whom he had let slip from care and ken for more than twenty years? Perhaps he did not yet know, nor fully comprehend. She found herself thinking it would be well that it should be so. She shrank from embracing, even from touching him. She was filled with shame for him, and yet she was ashamed of her shame.

In this turbulent state of emotion she scarcely noticed that he was being hurried up the lane, by Mr Doughty on one side and the policeman on the other, and that she herself was hastening after them, away from that hideous Inferno, whose stifling fumes seemed still creeping and writhing about her.

They found the cab waiting for them where they had left it. Mr Doughty opened the door and helped his chief to enter. Then he turned to Miss Raynor. 'Miss Raynor,' said he, in a low but impressive voice, 'you see him at his worst—his very worst: you must not judge of him as you see him now.'

'No,' said she, stung somewhat with her former jealousy that a stranger should know more of her father than she knew; 'I must not—I do not. You have my purse, Mr Doughty: will you give the policeman something for his kindness?' Then turning to the policeman, she said, 'Thank you very much,' and entered the cab, and sat down opposite her father.

Mr Doughty did as she requested. Then, closing the cab-door without a word, he mounted

again beside the driver. Isabel felt curiously grateful for so small a matter, and was in some sense cheered by it. She was compelled to see that these delicate turns of behaviour which are taken to mark a gentleman were still possible even to so poor and saddened a creature as Mr Doughty, and she therefore was inclined to be hopeful about her father. Moreover, she considered and said to herself: 'There must, after all, be something good and attractive about him even for poor Mr Doughty to have remained attached and faithful friend these many years.' All which is significant evidence of the prostrate condition to which her feelings and hopes had been reduced by the sight of her father.

They had not driven very far—Isabel on one seat and her father leaning back in the corner of the other—and she was wondering whether he was not asleep, when he suddenly threw himself forward with his face in his hands and his elbows resting on his knees and sobbed aloud. Upon that the imprisoned founts of feeling in Isabel's generous breast burst forth and swept away all doubt and speculation; she became simply a large-hearted woman and a daughter aware that there before her was a man, her father, needing pity and consolation.

'Father!' she cried, and sank on her knees before him. 'Don't! Don't! I'm here!' She took one of his hands, which he yielded to her, and she put her arm about him.

'Rise, rise!' he said, in a sharp treble of agony. 'It is I should be there!'

She yielded to his insistent hand, and sat beside him.

'Don't speak to me,' said he; 'let me look at you. You are like your mother—poor mother!—but stronger—much stronger. How does it happen?'

Isabel looked at him, and for the first time met his eye: there was a light in it which belied the haggard debauchery of the countenance, and which at once made her feel that she was not the chief person there. She was relieved and soothed: she was now certain that her father was not a saddened brute; that, much and terribly though he might have tried, tortured, and debased his body, his intellect and soul still shone clear through all. He leaned back again, looking at her and dreaming, and she sat content (comparatively), and still held his hand, in spite of its nervous twitching, pleased to find it warm and of a beautiful shape. They said no further word to each other till the cab stopped and Mr Doughty came to the door. This time it was Isabel that helped her father. He took her arm out of the cab and into the lodging, which was on the ground-floor of one of the houses of Norfolk Street.

Seeing that Mr Doughty had not followed them in, and hearing voices without for some instants in tolerably loud debate, Isabel—who feared the cabman was in process of being dismissed, and who, moreover, now felt herself responsible for her father and his friend—went to the door.

'I had intended,' she heard Mr Doughty say in portentous tones to the cabman—'I had intended to bestow upon you a considerable honorarium; but, considering the suggestions you have rudely urged concerning this adorable and angelic young lady, I shall not bestow it.'

'But, at least, sir,' said the cabman—who was evidently very civil, as cabmen go—'I hope you won't go and forget the half-pint of Scotch I got.'

'Hush!' said Mr Doughty. 'I will not.'

'Mr Doughty,' called she, 'don't send the cab away: I shall want it to take me home presently. Ask the cabman to wait, please.'

'All right, miss,' the cabman answered for himself.

Isabel was returning to her father, when she heard the voice of Mr Doughty calling her. She waited; and he came to her with business-like air.

'One moment, Miss Raynor,' said he. 'I beg to resign the trust you confided to me'—and he handed back her purse. 'The disbursements—of which I have made a note on this morsel of paper—cover Johnny Chinaman's charges and the cab fare up till now, together with a shilling which I ventured to borrow to furnish some slight refreshment for the cabman and myself. Did I do wrong?'

'Oh no,' said Isabel; and she secretly thought well of him for his confession that he had 'borrowed.'—'But,' she added, 'you must take charge of a little money for my father. He ought, by the way, to eat something at once. I suppose he has not had much food at the Chinaman's these three days?'

'Food, Miss Raynor?' said Mr Doughty. 'The only food supplied or demanded in that Hades is opium! And the chief would not taste solid food at present if he had it.'

'And the shops are all closed!' she exclaimed. She was thinking that she might have bought some soup for him; but nothing could be done now; and she reflected that, after all, he was probably no worse off than he had been many a time before after he had been sated with his drug. It was inevitable he should wait for her provision, but she would ensure that his wants should be properly supplied next day. 'I suppose,' said she, 'that you have nothing in the house that could be easily got ready?'

'I do not know, Miss Raynor,' said Mr Doughty; 'but I am tolerably sure there is not. Food, Miss Raynor, is not our strong point in this house.'

'I suspected as much; but,' said she, with good sense, 'it is with neglecting your food that you foolish men confirm your dreadful habits.'

'You are right, Miss Raynor. We weak male mortals go completely wrong when we have not the clear head and the strong heart of the better sex with us.'

'Compliments again, Mr Doughty,' said Isabel. 'Simple truth, I assure you,' said Mr Doughty.

—'And now, Miss Raynor, will you permit me to say that I think it wise of you not to propose to hold much conversation with your father now. Apart from the fact that it is very nearly midnight, the chief is at this present time in his very lowest condition. I would offer to escort you to your—ahem—abode, but I do not think it would be well to leave the chief alone as he is.'

'What?' said Isabel. 'He would not try, surely, to go back to that dreadful place?'

'No,' said Mr Doughty; 'not that. But he might try to lay violent hands on himself.—But,

pray, do not be alarmed. I know his ways, and I will look after him. He sleeps little, but I sleep less, and on these particular occasions I keep a special watch upon him.'

Isabel hesitated; for these words of Mr Doughty brought back doubts and fears. Ought she to stay with her father?—to soothe and strengthen him, if so be she might? It was characteristic of her frank independence and her lack of self-consciousness not to view this at all as a question of propriety with regard to herself. She entered the little sitting-room, determined to let herself be decided by what her father might chance to say. He was reclining limp in an easy-chair—the comfortless, casterless easy-chair of the London lodging-house—apparently in a state of apathy. His eyes found her, however, as soon as she entered.

'Don't take your things off,' said he—she was only undoing a button or two of her jacket. 'You must not stay here: this place is not fit for you.'

'I will go,' said Mr Doughty, 'and interview our landlady;' and he discreetly withdrew.

'I do not propose to stay, father,' said Isabel, going nearer to him. 'I have lodgings of my own.'

'Don't come near me at present, my child,' said he. 'Sit there, and let me look at you. I am glad you have rooms of your own—but not in this house, I hope—not in this house. It is a dreadful house.' He kept his eyes sadly and wistfully fixed on her. 'You have come to me as an angel of God, my dear. I do not ask you now how you found me: we will talk of that and other things by-and-by. I cannot talk of anything now: I—I am not well enough.'

'Promise me, father,' said she, leaning towards him, 'that you will take some food at once?'

'Food? I need no food now, my child. It is meat and drink to look on you. I have often longed to see you—to see how the poor baby that they took from me was grown.'

'My poor father!' she cried, and before he could hinder her, she was on her knees beside him.

'And you are my daughter!' said he, still gazing at her wistfully and half-absently. 'You are very beautiful, my dear—far more beautiful than I could have imagined you to be.'

'Don't say these things, father,' said Isabel, blushing, but pleased.

'It is a good thing to be beautiful, and it is good to know it. The chances are that a truly beautiful woman has a beautiful nature: there is no kind of doubt of that with you.' Then he let his chin drop on his breast and fixed his eyes on vacancy as he murmured:

'I remember one that perished; sweetly did she speak and move:

Such an one do I remember—

I cannot talk now: I am tired: I am not quite well.' He roused himself a little and said: 'Come and see me to-morrow if you can. Yes; come, and I'll talk with you.'

His chin dropped again on his breast and his eyes closed. He seemed to slide away into sleep; and after a minute or two Isabel rose and quietly went out. She found Mr Doughty waiting at the outer door to see her into her cab. She told

him she would visit her father early next evening, gave him a kindly adieu, and was driven away as the clocks of Islington reproachfully tolled her out the hour of twelve.

THE MANUFACTURE OF ARSENIC.

THE utilisation of waste is one of the great lessons we are learning at the close of the nineteenth century. What our fathers and grandfathers threw away, that we find profitable to work for something it contains which was unknown or disregarded by them, or which has since acquired a new value. This is notably the case with the arsenical pyrites, or mundic, turned out in vast quantities from the copper mines in Devon and Cornwall, principally on both banks of the Tamar. At one time, these mines, rich in copper, were worked vigorously for that metal, and the mundic was cast away, forming enormous 'ramps,' as they are locally termed, or mounds of this waste. After a while the price of copper declined and the richness of the lodes became less. Simultaneously a demand sprang up for arsenic, and now the old copper mines are worked, not exclusively but mainly for arsenic. The cost of production is of course greatly reduced by the fact that enormous quantities had been brought up from underground, and had been thrown out under the previous system, and these waste heaps were now reworked for the sake of the arsenic. Formerly, 'arsenic soot' was sold from half-a-crown to fifteen shillings a ton; now its price ranges from seven pounds to seven pounds ten shillings.

The value of arsenic as something other than a poison or a pigment is of recent discovery. In ancient classic times, the beauty of orpiment, the yellow sulphide, was known, but not realgo, the disulphate of arsenic, which is of a ruby colour. Arsenic as a pigment has been, and, we fear, still is, much used in the colouring of wall-papers—in fact, Kay's orpiment is such a valuable pigment artistically, that the paper-stainers can hardly do without it, if purchasers will have æsthetic greens and yellows. And here, before proceeding any further with the manufacture of arsenic, the writer desires to place before the reader certain experiences of his own with regard to wall-papers coloured with orpiment. Some years ago he went to one of the most noted of firms for æsthetic papers wherewith to cover the walls of his house. A few years after, his children were afflicted with obstinate sores about the mouth, the wrists, and the ankles. The village doctor was called in, an old-fashioned practitioner, who gave doses and prescribed diet, with no good result. Then all at once it occurred to the writer to have the wall-papers analysed. They were found to be charged with arsenic; the gum fastening the colour to the paper had yielded, and the arsenical dust was flying about and lodging everywhere. The children were removed, and recovered. A month later the whole party was in Germany, and the writer called on a friend living in the town where he had taken up his quarters, and inquired how he and his family were. 'Oh! I am well enough; but my boys are suffering from some most intractable sores about their wrists and ankles.'

'Arsenic!' exclaimed the writer.

'But,' said his friend, 'my neighbour, General von B—, has his young people suffering in the same manner.'

'Exactly—arsenic.'

Now, in German towns there are public analysers who for a small charge—in this case a mark, one shilling—will analyse what are suspicious substances. The testing of the papers followed; and it proved that in the bedrooms of the English boys there were three coatings of wall-papers all laden with arsenic; and it was the same with those of the German General's family.

The question naturally arises: Is the manufacture of arsenic prejudicial to the health of the workers? To a certain extent it must be so; but it is not so to anything like the extent that might be supposed. The best means of resisting arsenic is by the use of soap and water. The workmen engaged in the manufacture have their mouths and noses muffled, to prevent their inhaling the dust. They wash and completely change their clothing on leaving work, and they enjoy complete freedom from zymotic diseases, as all germs are killed, either by the arsenic dust, or by the sulphurous acid given off by the manufacture. The time of greatest mischief is the summer, when the men perspire; then the arsenic adheres, and produces sores. Moreover, where there is a wound, if arsenic enters it, it will not heal till the bone has been reached. The best remedy for sores produced by arsenic is fuller's earth. The men believe that the arsenic produces shortness of breath and asthma; but this is really the result of their having to work all day with their noses and mouths covered by woollen mufflers.

Let us now look at the manufacture, and for that purpose we will take the Devon Great Consols Mine, where the largest amount of arsenic is made. This occupies a tongue of land about which the river Tamar forms a loop. It is completely barren on its top, all vegetation being killed by the fumes of sulphurous acid. The mine was worked for copper between 1844 and 1862 with wonderful results. The lode was thirty feet wide, and ran for a mile. After that, it gave out, and has been worked mainly for arsenic since 1874.

Arsenical mundic contains from twelve and a half to seventeen per cent. of arsenic, and from twenty-five to thirty per cent. of iron. It has a silvery lead look, with yellow stains in it where is copper. The first process consists in dividing the copper ore from the mundic. For this purpose all the rock brought up from the mine is broken into pieces of the size of a nut; then this, as well as the refuse, is 'jigged,' that is to say is subjected to shaking in sieves, which let the small particles fall through, and reserve only the nuggets. The small matter is not, however, wasted; it is subjected to washing in 'strips,' where the water deposits first the mundic, as heaviest, then the copper ore, and lastly the refuse. The refuse, however, is not dismissed till it has been again jigged and washed, so that every particle of copper and of mundic has been saved from it. What passes away is then mere earthy matter.

The lumps of broken stone cannot be separated thus easily by water; they have to be assorted by hand. For this purpose girls are employed, locally called 'bâl maidens,' from the Cornish

word 'bâl,' which signifies a mine. These girls, five in a row, recline on sloping shelves of board, with a table before them and a trough. On each side of the table are three wooden boxes. With a curved iron tool the girls rake the stones to them and sort them, according to colour. The yellow and 'peacock' copper is thrown into the trough under their noses. The mundic is tossed adroitly into the nearest box on right or left; the 'elvan,' or inferior, into the second; and the rubbish into the third.

Before the table flows a stream of water. The stones are brought in barrows from the jiggers, and are tipped into the water. Then a young man with a fork dips them out and throws them upon the table, and so continually supplies the bâl maidens with material for selection. The boxes have to be examined by the overlooker, to make sure that the girls have not been careless and have thrown away good stuff. Then the copper ore is sent away to Wales to be smelted. As it requires four tons of coal to smelt one ton of ore, it is obviously advisable to convey the ore to the coal, and not bring the coal to the ore. The ore is worth about twenty-five shillings a ton.

The mundic is now taken to the furnaces, where it is first subjected to fires made of ordinary common coal. It passes along with the smoke into condensers. When condensed, it is gray, being mixed with smoke soot. In this condition it is called 'arsenic soot.' The condensation takes place on the floor and sides of the chimney, which is carried many hundred feet at an incline to a main shaft. From the condenser the arsenic is scraped out by the workmen closely muffled; then is again subjected to fire in calciners, the fire being of anthracite coal. Beside the ordinary furnaces, there are two sorts of calciners in use of a very original and interesting character. One of these is an enormous drum thirty feet long and three feet six inches in diameter, furnished with flanges internally. This drum or cylinder rotates at an incline. The arsenic soot is tipped into it at the top, and is turned over and over as the cylinder revolves, partly by its own weight, partly by the flanges. A fire is burning at one end of the drum, and the flame passes through it, consuming the arsenic as it falls, or is tossed athwart it. It is possible to look into the glowing interior as it rotates and watch the fiery heat scintillate with the arsenic that falls as a shower of stars. Another calciner consists of a horizontal rotary metal disc like a millstone, somewhat convex. The cap of this disc is stationary, and is armed with fangs that reach almost to the disc. The arsenic soot flows in through the centre of the cap, and is turned over, ploughed up by the fangs as the disc on which it rests revolves. A furnace on one side sends its fiery breath between the rotating nether disc and the coverer, and turns both to a glowing red, so that the arsenic is volatilised, and all the dross slides away to the lowest portion of the machine and discharges itself over the edge. The vapour is carried through the condensers, of which a mile in length exist. In the side of this gradually ascending brick chimney are openings closed with iron doors. These are ten feet apart. When the furnace is let out, the doors are opened, and the arsenic dust and crystals are raked and cut out.

The crystalline formation is from two to three inches thick on the sides, but two-thirds of the arsenic deposited is on the floor. It is now as white as paper. Some of the clusters of rhombohedral crystals are very beautiful. The arsenic has to be removed whilst warm to the mill to be ground; if left to get cold, the hardness of the crystals would cut the grinders to pieces. At the mill, the workmen are again closely muffled. They have to heave the arsenic turned out from barrows into the mill hopper. When reduced to powder in the mill, it is put into casks that contain from three hundredweight to three hundredweight twenty-five pounds, which are conveyed to the stores.

The vapour from the calciners, after passing through the condensers, traverses a sheet of falling water, which arrests a certain amount of the sulphur in the fumes. Owing to the noxious effect of sulphurous acid on vegetation, more than a certain amount of this acid is not allowed to be given off; it is therefore sought to arrest it on its way. The water as it flows away is milky, or rather like soap and water, from the sulphur it contains. The height of the shaft is one hundred and twenty-five feet.

In Styria and Carinthia, there is much arsenic-eating among the peasants; the women take it to give themselves a good complexion and to make their hair fine and glossy. The men take it because they believe that it gives them wind in climbing in the chase after chamois. There is nothing of this sort in Cornwall and Devon. In Styria and Carinthia it is known that an arsenic-eater can never be broken off the habit, and that, if arsenic be compulsorily kept from the eater, death rapidly ensues. It is believed in the Tamar—and this is perhaps true—that an arsenic-worker is fit for no other work. He must remain at this occupation. Health and breath fail him at other employments. Eventually, it may be that chronic arsenical poisoning ensues; but this may be staved off, if not wholly prevented, by scrupulous cleanliness, by care taken not only to wash in the 'changing-house,' but to bathe freely at home. As one of the foremen said to the writer of this article: 'Against arsenic the best antidote is soap taken externally.'

BY ACCIDENT.

CHAPTER II.

THE local Society of Ancient Chums met every Monday night in the bar parlour of the *Hop Pocket* inn, situated in the pleasant Kentish village of Bennington. It was a fraternity of old friends and acquaintances who assembled once a week for social enjoyment, conversation, discussion of the questions of the day, the consumption of tobacco and accompaniments. There was no subscription to the Society, but in its place there was an elaborate system of fines, so framed that the oldest and most practised member was pretty sure to be mulcted at least once during an evening, so that the community might fairly be styled self-supporting. The last Monday of each month was marked by the reception of guests, and was therefore of a more convivial and hilarious character than ordinary nights.

The Monday night following the events recorded in the last chapter was Grand Night, and despite the character of the weather—bitterly cold with a driving snow—there was a large muster of members and their friends; in fact, every chair in the room was occupied but the most prominent one—the President's. Eight o'clock struck, and at eight o'clock proceedings were ruled to commence.

'Martin don't often hev to pay for bein' late,' remarked Mr Wicks, a copper-nosed gentleman in the chandlery line. 'Wonder what's kep him?'

'He's in general off duty at half-past seven, ain't he?' said his neighbour, who had village tailor stamped all over him.

'Sure-ly, unless the weather's agin him,' said a large man in black with a white neckcloth—sexton, clerk, and beadle of Bennington. 'President pays double fine, don't he?'

'That's one to you, Mr Selah, for not bein' sure of the rules!' shouted out two or three voices, and Mr Selah plumped down his coin.

'I move that we give Mr Martin five minutes' grace,' said a grave gentleman, rising.

The motion was seconded and carried.

The five minutes had just expired, and the Society was on the point of proceeding to elect a temporary President in the place of the absent Martin, when the door opened, and in waddled a round little barrel of a man, with a ruddy, good-tempered face, who was attired in the uniform of signalman on the Great Southern Railway. He was greeted with a storm of ironical applause; but there was an unusual gravity about his demeanour which checked it.

'I'm quite ready to pay my fine, gentlemen,' he said as he took his seat in the Presidential chair; 'and I'm ter'ble sorry for havin' kep you all waitin', specially as it's Grand Night; but when you've heard what I've got to tell, you won't blame me.—Now, give your orders, gentlemen, and let's to business.'

Orders went flying about the room, so that the landlord and his two wenches had as much as they could do to attend to them. When comparative quiet was restored, old Martin said: 'Praps you won't think it much that I have to tell, but it's a bit cur'ous, and as part of my fine is to sing a song or make a speech, you'll please take it for what it's worth.'

'Hear, hear!' resounded through the room.

'My box,' said the old man, 'is, as you all know, at the level crossin' at Causey End, and my last dooty afore bein' relieved is to signal the down mail at seven-twenty-five. At seven-thirty I'm relieved. Well, at seven-fifteen I got the signal that she'd passed through Brickenden Junction. At seven-twenty I heard her whistle. At seven-twenty-three I saw her head lamps comin' up at quarter speed, 'cos I hadn't got the all-clear signal from Marsh House, which didn't surprise me, as they've been doin' up the embankment there. So the mail came slowly past, so slow that I could see as how there was very few people in the coaches, which, as it's gettin' on towards Christmas-time, ain't surprisin'.—Now comes the strange part. The mail pulled up, and out o' the winder of a fust-class coach not half-a-dozen yards from me a gentleman was leanin': his arms a hangin' down outside, and his head pushed forward, like, for all the world, as if he

was very ill. For what I could see, his compartment hadn't nobody else in it.

'I sings out to him: "Are you ill, sir? Shall I wire to the next station, or call the guard?" But he didn't make no answer; leas'taways, I didn't hear none, as the wind was howlin' fit to kill any noise under a engine whistle. In another minute I should ha' been up on the footboard alongside him; but the all-clear signal came from Marsh House, and I had to 'tend to it. Howsome'dever, as the guard's van passed by I sung out that there was a gent took ill in a fust-class compartment; but I don't know if Sam Hall heerd it. Then the mail went on, and I prepared to clear out.'

The general opinion, expressed in every variety of interjectional phrase, was that it was very strange, and Martin was asked what he thought of it.

'Well,' he replied, 'if you ask me my candid opinion, I give it for what it is wuth. You see, it was the Injian mail. Well, says you, what difference does that make? A great deal, says I. I've been on the Great Southern now a matter o' forty years, and my experience is that as a rule the Injian mail is the liveliest train that goes out o' Lunnun—much more livelier 'n excursions and them like.—How's that? says you. Because, says I, gents goin' to Injia for the Lord knows how long, perhaps never to come back no more, goes off as happy as they can. Their pals gives 'em big dinners, and there's drinks at the terminus afore startin', and all that; and I can tell you I've seen high-jinks sometimes in the coaches when the train's slowed down as it did to-night. So, my opinion is that this gent was—well, he was ill. You can't eat your cake and have it, as the sayin' is; and he'd eaten his cake, and he'd taken somethink along with it, and the 'eat of the coach and one thing and another was too much for him. That's my notion.—But that wasn't what made me late.

'The mail went on. I set my distant to danger: Jim Boston come in to relieve me, and I went off. Now, as you all know, except the gents as is strangers, my road home lies along the side of the line for a matter o' half a mile; then I strikes the turnpike and leaves it. Well, it was blowin' and snowin' half an hour ago as it don't often blow and snow in these parts, and although I'd got my lantern, it was jest as much as I could do to see my way along the path by the line. At anyrate it was so precious dark that I couldn't see a big chap a settin' on the slope of the embankment a yard ahead of me, and well nigh tumbles over him. I pulls up sharp. He was a settin' and groanin' and makin' use of words, gents, which would cost him a fine a minute in this 'ere select company. So I turns my light on him, and gives him a "What cheer, mate?"

'He started, and stops his prayers. "What cheer?" says he. "Precious poor cheer this journey. I've lost my way to Brickenden Junction, and thought I'd try a cut along the line, when these blooming tallygraph wires trips me up, and I've gone and sprained my ankle."

"Just as well, mate," says I, "that you tumbled where you did. A foot t'other way would have got you across the down metals." Then I helps him up; but he were so precious lame that I as

good as carried him to the turnpike; and if he weighed a hounce, he weighed thirteen stone, and I ain't as young as I were.

'As luck would heve it, the mail-cart was waitin' at the level crossin'; so I gets him into it. He gives me a shillin', as I thinks, and says good-night, and off he goes; and off I goes home. When my missis see me, she give a reg'lar shout, and says she: "Why, Bob, whereever heve you been? You're all blood." Sure enough, I was—coat, cuffs, and collar. Rum start, thinks I, for a chap with a sprained ankle to bleed. I reckon he'd hurt hisself more than he thought. Then I looks at the coin he gave me, and it warn't a shillin' at all, but a bit o' brass of the same size, with "Royal Arcadia Music Hall—Free Pass Check—not transferable," wrote on it.—And that's what made me late, gentlemen.—Here's to you all!

This speech of Bob Martin's gave rise to a lively discussion, which lasted a good half-hour. At the expiration of that time the President arose, knocked on the table, and was suggesting that some gentleman should oblige the company with a song, when the landlord rushed into the room with great news on his face. 'Night-mail wrecked near Singleby,' he gasped. 'Thirty or forty killed, and hundreds wounded!'

Half the assembly sprang to their feet. Pipes were taken from lips, glasses remained suspended in mid-air, and a chorus of 'How do you know?' 'When?' and other questions of the kind, arose.

'Messenger just come in from Brickenden. All the doctors and carts in the country are being called for,' replied the breathless landlord.

'Well, it never rains but it pours,' said old Martin; 'and thank the Lord this ain't happened in my section.'

It is needless to say that the assembly of Ancient Chums was at once broken up, and that the majority of those who had met together for an evening of enjoyment at once hastened away to the scene of the catastrophe.

Dick Marsden still clung to one link which bound him to his old pleasant, happy life as an unfettered bachelor, in spite of the low estate to which he had fallen: this was his membership of a quiet little social club composed chiefly of old public-school men, where moderation in expense was the rule, and the outlay of more famous and pretentious institutions over magnificent architecture, grand rooms, liveries, and brilliant illumination, was devoted to the more immediately personal comforts of the members. When very sick at heart and down in his luck, Dick would walk over to the Snuggery, as it was called, and there, in the chat and mirth of old friends and men of his own station, forget for a while his domestic misery. After he had seen his uncle comfortably settled in a compartment of the mail-train, Dick walked over to the house in Portland Place to give a few final instructions to the caretaker, and to make a general survey of locks and bolts; and then, discovering that he had a piece of gold in his pocket, resolved for once to be selfish and to dine at the Snuggery.

He dined, and after dinner played a couple of games of billiards. Then, it now being nearly nine o'clock, he prepared to go home. As he passed through the hall the porter was putting

a Central News telegram on the frame. Curiosity prompted him to read it; it was as follows: 'Terrible Accident to the Mail on the Great Southern. Reported loss of twelve lives.—Later—The Indian mail-train ran off the line at a point near Singleby where the embankment has lately been repaired. The loss of life has been exaggerated. Nine bodies are lying at the Singleby Station; over twenty persons were injured.'

'Good God!' exclaimed the young man, as he burst out of the building, and calling a hansom, bade the man drive to the Institution where Marian Akhurst lodged. Luckily, she was in. In a few words, Dick told her the news, and asked her if she could come with him at once to Singleby.

'Of course there is a chance that the dear old fellow may have escaped,' he said. 'But as there was no telegram for me at the club, I fear'—

'Perhaps not the worst,' said the girl.

'There were so few passengers by the train,' said Dick, 'that the large proportion of casualties makes the chance of uncle's escaping a small one: unless more people got in at the other terminus, which, as it was the Indian mail, is likely. However, if you can come, Marian, it will be such a comfort to me.'

They were just in time to catch the last train to Singleby. It pulled up half a mile from the scene of the accident: Marian and Dick alighted in the midst of the blinding storm, and, guided by the flare of many bonfires, proceeded, in the company of scores of people bound upon the same errand as themselves, to where gangs of men were already working hard to clear the line. A line of police barred their way; but upon stating their business, they were allowed to pass; and with what trepidation they approached the little station where the bodies of the killed lay awaiting identification may be imagined. Once within the door, all doubts were set at rest, for the first body they saw was that of poor old Christopher Marsden.

'Strange thing about that gentleman, sir,' said an official who witnessed Dick's recognition of his uncle's body. 'The coach he was in didn't leave the line, and he was the only party in it who was killed. He was found leaning out of window; and as he was evidently killed by a blow in the back of the head, it's supposed he was looking out of window when the front part of the train left the metals, and must have been struck by a bolt or a timber or something from the next coach which went over the bank.'

Marian knelt down by the body, and with professional deftness examined a terrible wound at the base of the poor old gentleman's skull. 'Yes; this was what killed him,' she said. 'Yet he must have been looking in the opposite direction to that in which the train was going.'

'Possibly to call the guard,' said Dick. 'At anyrate, there he lies; and I have lost my best and, I was going to say, my only friend in the world. Poor old Uncle Christopher!' He looked at Marian. There were tears in her eyes, and in the face of this common sorrow their hands met with gentle pressure.

'The body, I suppose, must not be removed?' said Dick.

'No, sir; not till after the inquest,' replied the official.

Then they quitted the terrible scene, and were lucky enough to secure the last two beds at the small inn adjoining the station; for there was no train back to London, and there had been a great demand for accommodation on behalf of the many people who had come down in quest of relations and friends.

ELF-BOLTS.

THERE is something very fascinating in the legends of dwarfs and elves. For the most part we have to look in the pages of Grimm or Hans Christian Andersen when we want to peep into the fairy world; but every now and then, in out-of-the-way places, we may find ourselves in curious proximity to those mysterious times. For instance, the writer remembers, some fifteen years ago, when living on the Yorkshire moors, overhearing a dispute which was taking place in a public-house between two old men, one of whom was the parish sexton. While digging a grave, the sexton had turned out what he called a fairy pipe. This well-known form of pipe, which is found dispersed all over the country, is so small that you cannot pass the tip of the little finger into the bowl. No doubt it was used when tobacco was scarce and expensive, and its diminutive size has caused it to be attributed to the elves and fairies who alone could make use of it. The dispute, however, was not about the pipe. Both the old men agreed as to whom the pipe had belonged to; but they were endeavouring to settle what kind of 'bacca' the fairies smoked. Various suggestions were made, and different herbs named, when I joined in the conversation, and turned it from pipes to elf-bolts or elf-shot, some of which I produced from my pocket; and from these old inhabitants I gathered that the flint arrow-heads or elf-shot were used by these same elfin folk who owned the tobacco pipes. The district where I lived was rich in these prehistoric articles, and they were picked up in quantities in the fields round about.

It is hardly surprising that the natives should regard these queer-looking arrow-heads as belonging to the fairy folk, when for hundreds of years their direct ancestors had inhabited that part of Yorkshire, into which education had made but little progress. A place close by was called Dwarriden, which was remarkable for echoes; and when I submitted the name to the best authority on place-names, I was told that it meant 'the abode of the dwarfs,' as, in Scandinavian mythology, wherever you found an echo it was the voice of a dwarf answering you in reply.

Another curious survival in the same parish was this old tradition: Mothers used to threaten their children with a certain black raven, who would come if they were naughty and carry them off, just as once upon a time he had done, when

he ravaged the country and destroyed everything. The only interpretation of this awful threat I gathered from an old woman, who told me that in her young days it was firmly believed that some great calamity had once befallen the district. As the black raven was the Danish emblem, it is quite possible an incursion from that people gave rise to this story, which had survived all those long years.

Few people know what an amusing and instructive pursuit the search after flint weapons is. To begin with, it takes you out of the house for a walk very often when you would have stayed in. Spring and autumn are the best times for searching, and a ploughed field should be chosen that has been well rained upon, so that the flints are washed clear and can be easily detected. I am speaking only of a country in which the natural stone is not flint. Where natural flints abound, you can only judge of the genuineness of the implement by the workings of the tool, which are always to be seen. In the ordinary districts away from the chalk, each surface flint will prove either a real implement or a flake struck off in its manufacture. These remarks may be said to apply to those lucky spots where flints are found, and the idea may be that there are not many such about. I differ from this idea. So far as my own experience goes, I have found these elf-bolts wherever I have been; and if there is one bit of fairy romance left connected with them, it is in their being so universal that it gives the notion of some spirit-work in their distribution.

Any one who follows the plan I suggest of going out into the ploughed fields and searching for flints, will come across many curious implements. Among them none is so peculiar as the scraper. This varies a good deal in form, but the common type is a sort of half oyster-shell, supposing this to be solid where the fish is, and cut off square where the point of the shell comes, so that one side presents a flattened face, and the other a sloped well-worked back, ending in a sharpened cutting edge. I found scores of these before I knew what they were; and I must own I was astonished to find that the Eskimos of the present day adopt still this same form of flint scraper. It is difficult to reconcile the ancient flint man of the Yorkshire moors with the Greenlanders in his curious snow-hut, living on the spoils of the chase and scraping the skins of his animals with the same sort of weapon.

Another analogous instance of identity of flint form was the following. I took up to the British Museum a quantity of flints and elf-shot for examination. One was selected no bigger than my little finger-nail, and I was told this was an Egyptian arrow-head. But how came an Egyptian arrow-head on our English moors? There is this remarkable distinction about these Egyptian types of arrow-heads—they are not pointed. Supposing a triangle of flint, it was their custom to put the point into the shaft, and to use the broad base as a point to face the enemy, exactly reversing what I may call the British custom. Yet here on the moors I find not one, but several, undoubtedly proving that the men who used these flints were cognisant of both shapes of elf-shot. The small size of the Egyptian type is very peculiar, as it is utterly

different from the arrow-head commonly found not only in Britain but all over the world. I have elf-shot from Italy, Greece, North America, South America, and other lands, but none like the Egyptian arrow-point.

It may be said that human beings all develop similar characteristics, and it is quite reasonable to suppose the Egyptian and the British flint man would originate similar ideas. This may be possible; but I hardly think it accounts for the identity of flint forms. This is the most striking feature when a collection of British flints is put beside one gathered from all countries. There is little difference, again, in a very interesting class of implement, the saw, between the British flint saw and the Egyptian. I found on the moors some very delicate flint saws, and recently I have obtained from Egypt flint saws wonderfully similar in form. Perhaps with these saws was performed that difficult operation of trepanning, which was known in primitive times, and practised. Skulls are found in British interments which have been trepanned, only no metal plate was used, but a piece of another skull was let in in place of it. The agony of such an operation may be imagined; and with some thousands of collected flints before me, I could not select one I could deem fit to use for such a purpose.

The delicacy of workmanship of many elf-bolts is remarkable. I have some on which thousands of blows with some implement must have been delivered before the sharp point and barbed wings were formed. When it is remembered that any blow might snap the brittle flint, it must have needed a master's hand to bring such elf-shot to perfection. When H.M.S. *Challenger* was on her cruise, and arrived at Tierra del Fuego, the natives there, who are still in a Stone Age condition, were found to have utilised a broken soda-water bottle, from the fragments of which they made arrow-heads. I have one of these arrows, with its glass tip exquisitely made in the same pattern as those I found on the moors. There are undoubtedly numbers of what I may call worked flints to be picked up in the fields, showing upon their face the marks of the tool, and yet it is impossible to assign them any definite name. The fact is we know very little about the various uses to which flint was put. In many parts it must have been scarce. It is quite one hundred and more miles from the moors where I made a large collection to the nearest chalk district, and every atom of flint now found must have been carried there by hand.

The true elf-bolt, in all its well-formed beauty, is not so commonly picked up as the core or matrix from which the implement has been struck, or the flint fragment chipped off in its formation. Still, it is advisable to collect all bits, no matter whether they seem valuable or not, as a second examination often proves them to have been in use. Small pointed flints are found such as could be utilised for boring purposes, and very often a rounded flint proves after washing to have marks of blows on it, showing it to have been a hammer-stone, perhaps for making implements.

Though in the case of flint deposits in Britain it may not be possible to point to this or

that spot, and say, here such and such a battle was fought, and here are the remains of the weapons used on that occasion, still history may perhaps be brought to bear in other places. I have several very fine arrow-heads found at Lake Trasimene, in Italy, where, it will be remembered, Hannibal encountered the Romans and defeated them with enormous slaughter. I can see no reason why these arrow-heads should not be the weapons used by the warlike tribes who crossed the Alps with Hannibal, and in this particular battle fell in very large numbers. The iron weapons of the Romans have no doubt long since perished and rusted away, but the flints endure. We may know very little about the prehistoric times and the fierce battles waged by the wild tribes of those days, but their remains are around and about us. Time does not affect the flints. They show no sign of age, excepting a kind of dullness, and smoothness to touch, which newly-broken flint never has.

As a rule, few people care about collecting such things or thinking about them. It is a tedious amusement to walk up and down a ploughed field with a bent back, but it is by no means unhealthy. The soil smells with delicious fragrance, and you have the lark soaring above your head with his musical notes. A fairy pipe or two is often added to your 'bag,' and though some days may be blank, every now and again you have lucky finds that well reward you.

In advocating the search after flints I do so because I believe there is much yet to be found and learned about them. I have avoided quoting from scientific works, or trying to raise this paper above the level of a chat about elf-shot. Besides the fact that from the earliest times these flint weapons have been regarded in many places with something like superstition, they are, from the point of antiquity alone, well worth collecting. Year after year they are ploughed over and turned up, and they only want a quick eye to detect them. Some soils are naturally better than others, especially such as more readily yield to the influence of rain.

If I refer once more to the identity of flint-forms, it is because of late my collection has been much increased by flints from other parts of the world, and I am amazed at the resemblance in them to what I have found in England. The invention and use of flint implements seems to have been universal. Hence, the subject is well worth pursuing, and is one which the amateur can take up with pleasure. It is not confined to one particular place; wherever you go, you may pursue it. I have a friend at this moment on the Nile who gets the Arab boys to search for flints; and he writes to me about the wonderful knives, saws, and sickles he is collecting. Another friend lately sent me some flints which he found when walking on the battlefield of Marathon. It is well known that some of the wild tribes on the side of the Persian monarch tipped their arrows with stone. There is no place, and I was going to add no time, where and when flint-hunting cannot be pursued; but I draw the line at shooting. I once got into great disgrace by holding my head down when after partridges. Birds kept rising in front of me and getting off untouched. The fact was I was crossing fields rich with flints. The keeper

afterwards went to my host and complained. 'I can't make that gentleman out,' he said; 'he keeps his eyes down on the ground, and never looks at his birds. I fancy he must have something wrong in his 'ead.'

SOME EARLY STEAMSHIPS.

It is a matter of considerable surprise to most people, on taking a retrospective survey of the growth of the steam-navigation of this country, to discover how very remotely into the present century such a view carries them. The Steamship, somehow, seems to appeal to the understanding of the younger generation as one of the most modern among latter-day creations. It is difficult to associate her existence with the period of the Crimean War, and it seems wholly incongruous to talk of her as pre-Victorian. This, undoubtedly, is owing to the wonderful and rapid revolution wrought by the marine engine in the conditions of the sea-life. But though, indeed, the steam-vessel cannot afford to 'smile at the claims of long descent,' she was a very tangible realisation when the locomotive was still in embryo, and the electric telegraph a factor of the future which yet remained to be dreamt of.

The earliest steamers the world ever saw, not reckoning the experimental craft constructed by such men as Fulton, Bell, Symington, and Watt, were those employed in the transatlantic trade. As far back as the year 1819, the Yankee paddle-steamer 'Savannah,' of three hundred tons burden, crossed from the port of that name, in Georgia, to Liverpool. She occupied twenty-five days upon the passage; but, as she was fully rigged, and under all sail during at least two-thirds of the voyage, the merit of her performance, as an illustration of the superiority of the engine over canvas, is somewhat doubtful. Yet she was beyond dispute the first steamer to accomplish a long sea-voyage, and to the Americans belongs the credit of her exploit. Indeed, from the time of their last war with us, down to within a quarter of a century ago, our Yankee neighbours generally seemed to be a little ahead of this country in maritime matters. They taught us a lesson in shipbuilding by their famous Baltimore clippers, and they were the first to demonstrate in a practical manner, and to the complete capsizing of the learned Dr Lardner's theories, the possibility of employing steam for the purposes of ocean navigation. It was not, however, until a couple of decades later than the voyage of the 'Savannah' that the successful passages of two memorable vessels from England to America fairly established the era of what has been called the Atlantic steam ferry. These ships were respectively the 'Sirius' and the 'Great Western.' The former was a craft of about seven hundred tons burden, with engines of three hundred and twenty horse-power: she sailed from Cork on the 4th of April 1838, under the command of Lieutenant Roberts, R.N., bound for New York. The latter vessel was a steamer of 1340 tons, builders' measurement, with engines of four hundred and forty horse-power: she was commanded by Captain Hoskins, R.N., and sailed from Bristol on the 8th of April in the same year, bound likewise for New York. The 'Sirius,' it was calculated,

had a start of her competitor by about seven hundred nautical miles; but it was known that her utmost capabilities of speed scarcely exceeded eight knots an hour; whilst the 'Great Western,' on her trial trip from Blackwall to Gravesend, ran eleven knots an hour without difficulty.

The issue of the race was therefore awaited with the utmost curiosity on both sides of the Atlantic. Contemporary records usually afford good evidence of the significance of past events, and the interest in this novel ocean match was prodigious, to judge from the accounts with which the Liverpool and New York papers of the day teemed. The following is in brief the narrative of the voyage of these two famous ships across the Western Ocean. The 'Sirius,' after leaving Cork on the 4th of April, encountered very heavy weather, which greatly retarded her progress. She arrived, however, off Sandy Hook on the evening of Sunday, the 22d of April; but going aground, she did not get into the North River until the following morning. When it was known that she had arrived, New York grew instantly agitated with excitement. 'The news,' ran the account published by the *Journal of Commerce* in the United States, 'spread like wildfire through the city, and the river became literally dotted all over with boats conveying the curious to and from the stranger. There seemed to be a universal voice in congratulation, and every visage was illuminated with delight. A tacit conviction seemed to pervade every bosom that a most doubtful problem had been satisfactorily solved; visions of future advantage to science, to commerce, to moral philosophy, began to float before the "mind's eye;" curiosity to travel through the old country, and to inspect ancient institutions, began to stimulate the inquiring.

'Whilst all this was going on, suddenly there was seen over Governor's Island a dense black cloud of smoke spreading itself upward, and betokening another arrival. On it came with great rapidity, and about three o'clock in the afternoon its cause was made fully manifest to the accumulated multitudes at the Battery. It was the steamer "Great Western," of about 1600 tons burden (*sic*), [The difference probably lies between the net and the gross tonnage], under the command of Lieutenant Hoskins, R.N. She had left Bristol on the 8th inst., and on the 23d was making her triumphant entry into the port of New York. This immense moving mass was propelled at a rapid rate through the waters of the Bay; she passed swiftly and gracefully round the "Sirius," exchanging salutes with her, and then proceeded to her destined anchorage in the East River. If the public mind was stimulated by the arrival of the "Sirius" it became almost intoxicated with delight upon view of the superb "Great Western." The latter vessel was only fourteen clear days out; and neither vessel had sustained a damage worth mentioning, notwithstanding that both had to encounter very heavy weather. The "Sirius" was spoken with on the 14th of April in latitude 45° north, longitude 37° west. The "Great Western" was spoken on the 15th of April in latitude 46° 26' north, longitude 37° west. At these respective dates the "Great Western" had run 1305 miles in seven days from King Road; and the "Sirius" 1305

miles in ten days from Cork. The "Great Western" averaged 186½ miles per day, and the "Sirius" 130½ miles: "Great Western" gained on the "Sirius" fifty-six miles per day. The "Great Western" averaged seven and three-quarter miles per hour; the "Sirius" barely averaged five and a half miles per hour.'

Such was the first voyage made across the Atlantic by these two early steamships, and there is something of the true philosophy of history to be found in the interest which their advent created. It is worthy of passing note to learn what ultimately became of these celebrated vessels. The 'Sirius,' not proving staunch enough for the Atlantic surges, was sent to open steam-communication between London and St Petersburg, in which trade she was for several years successfully employed. The 'Great Western' plied regularly from Bristol to New York until the year 1847, when she was sold to the Royal Mail Company, and ran as one of their crack ships until 1857, in which year she was broken up at Vauxhall as being obsolete, and unable profitably to compete with the new class of steamers being built.

The success of these two vessels may be said to have completely established steam as a condition of the transatlantic navigation of the future. 'In October 1838,' says Lindsay, in his *History of Merchant Shipping*, 'Sir John Tobin, a well-known merchant of Liverpool, seeing the importance of the intercourse now rapidly increasing between the Old and New worlds, despatched on his own account a steamer to New York. She was built at Liverpool, after which place she was named, and made the passage outwards in sixteen and a half days. It was now clearly proved that the service could be performed, not merely with profit to those who engaged it, but with a regularity and speed which the finest description of sailing-vessels could not be expected to accomplish. If any doubts still existed on these important points, the second voyage of the "Great Western" set them at rest, she having on this occasion accomplished the outward passage in fourteen days sixteen hours, bringing with her the advices of the fastest American sailing-ships which had sailed from New York long before her, and thus proving the necessity of having the mails in future conveyed by steamers.'

In fact, as early as October 1838, the British Government, being satisfied of the superiority of steam-packets over sailing-ships, issued advertisements inviting tenders for the conveyance of the American mails by the former class of vessels. The owners of the 'Great Western,' big with confidence in the reputation of that ship, applied for the contract; but, not a little to their chagrin, it was awarded to Mr (afterwards Sir Samuel) Cunard, who as far back as 1830 had proposed the establishment of a steam-mail service across the Atlantic. The terms of the original contract were, that for the sum of fifty-five thousand pounds per annum, Messrs Cunard, Burns, and MacIver should supply three ships suitable for the purpose, and accomplish two voyages each month between Liverpool and the United States, leaving England at certain periods; but shortly afterwards, it was deemed more expedient to name fixed dates of departure on both sides of the Western Ocean. Subsequently, another ship

was required to be added to the service, and the amount of the subsidy was raised to eighty-one thousand pounds a year. The steam mail service between Liverpool, Halifax, and Boston was regularly established in 1840, the first vessel engaged in it being the 'Britannia,' the pioneer ship of the present Cunard line.

We get an admirable idea of what these early steamships were from Dickens's account of this same 'Britannia,' which was the vessel he crossed to America in on his first visit to that country in 1842. In one of his letters to John Forster, describing a storm they were overtaken by, he unconsciously reflects the wondering regard with which the world still viewed the triumphant achievements of the marine engine. 'For two or three hours,' he writes, 'we gave it up as a lost thing. This was not the exaggerated apprehension of a landsman merely. The head-engineer, who had been in one or the other of the Cunard vessels since they began running, had never seen such stress of weather; and I afterwards heard Captain Hewitt say that nothing but a steamer, and one of that strength, could have kept her course and stood it out. A sailing-vessel must have beaten off and driven where she would; while through all the fury of that gale they actually made fifty-four miles headlong through the tempest, straight on end, not varying their track in the least.' What would the skipper of one of the modern 'Atlantic greyhounds' think of such a feat? And, more interesting speculation still, what must Dickens himself have thought of the performances he lived to witness as against this astonishing accomplishment on the part of the old 'Britannia'?

There exists a tendency to ridicule the early steamers as they appear in portraits, with their huge paddle-boxes; tall, thin, dog-eared funnels; and heavily-rigged masts, as though their engines were regarded as quite auxiliary to their sail-power, and by no means to be relied upon. Contrasted with some of the leviathans of the present day, the steamers of half a century ago are no longer calculated to strike an awe into the beholder; but, in truth, some very fine vessels were built whilst the marine engine was still quite in its infancy. In a volume of the *Railway Magazine* for 1839 is an account of what are termed colossal steamers. 'An immense steamer,' runs the description, 'upwards of two hundred feet long, was lately launched at Bristol, for plying between England and America; but the one now building at Carling & Co.'s, Limehouse, for the American Steam Navigation Company, surpasses anything of the kind hitherto made. She is to be named after our Queen, the "Victoria;" will cost from eighty to one hundred thousand pounds, has about one hundred and fifty men now employed daily upon her, and is expected to be finished in November next. The extreme length is about 253 feet; but she is 237 feet between the perpendiculars, 40½ feet beam between the paddle-boxes, and twenty-seven feet one inch deep from the floor to the inner side of the spar-deck. The engines are two, of 250 horse-power each, with six feet four inch cylinders, and seven feet stroke. They are to be fitted with Hall's patent condensers, in addition to the common ones. She displaces at sixteen feet 2740 tons of water; her computed tonnage is 1800 tons. At

the water-line every additional inch displaces eighteen and a half tons. The average speed is expected to be about two hundred nautical miles a day, and consumption of coal about thirty tons. The best Welsh coal is to be used. It is calculated she will make the outward passage to New York in eighteen days, and the homeward in twelve, consuming 540 tons of coal out, and 360 home. Expectation is on tiptoe for the first voyage of this gigantic steamer, alongside of which other steamers look like little fishing-boats.'

The next route on which steam-navigation was opened, following upon that of the North Atlantic passage, was between Great Britain and India. The steamers of the Honourable Company had indeed doubled the Cape nearly two years before the 'Sirius' and 'Great Western' sailed upon their first trip. The *Nautical Magazine* for 1836 contains the original prospectus issued by a syndicate of London merchants upon the subject of steam-communication with the East Indies. As an illustration of the almost incredible strides that have been made in ocean-travelling since that period, this piece of literature is most instructive. The circular opens by announcing that it is proposed to establish steam-traffic with India, extending, perhaps, even to Australia! It points out in sanguine terms how those distant parts of the earth, by the contemplated arrangement, 'will be reached at the outset in the short period of seventy-three days; and, when experience is obtained, this time will in all probability be reduced by one-third; shortening the distance by the route in question, from England to Australia, in forty days' steaming, at ten miles an hour. If two days be allowed for stoppages at stations, not averaging more than a thousand miles apart throughout the line, the whole time for passing between the extreme points would only be sixty days; but a relay of vessels will follow, if the undertaking be matured, in which case twenty-four hours will be ample time at the depôts, and a communication may be expected to be established, and kept up throughout the year, between England and Australia, in fifty days. It is reasonably expected that Bombay will be reached in forty-eight days, Madras in fifty-five, Calcutta in fifty-nine, Penang in fifty-seven, Singapore in sixty, Batavia in sixty-two, Canton in sixty-eight, and Mauritius in fifty-four days.'

The *Nautical Magazine* writer gravely comments upon this scheme as quite plausible. He is indeed inclined to be anticipatory. Instead of seventy-three days to Australia, he is of opinion that the voyage may ultimately be accomplished in fifty, and that the table of time generally may be reduced by about one-third throughout; although, to qualify his somewhat daring speculations, he admits that it is well to base the calculations on the safe side. But the Honourable East India Company asserted their prerogatives, and put a stop to the scheme of the New Bengal Steam Company, as the undertaking was to have been called. This raised a strong feeling of dissatisfaction, and the Court of Directors was obliged to provide a substitute in lieu of the new line they had refused to sanction. Their own homely, lubberly craft were quite unequal to the requirements of 'prompt despatch' which even then was beginning to agitate the public mind.

The possibility of establishing steam-communication between England and India had been clearly demonstrated as early as the year 1825, when the 'Enterprise,' of 480 tons and 120 horse-power, sailed from London on the 16th of August, and arrived in Calcutta on the 7th of December. She was the first steamer to make the passage from this country to our great Eastern Empire; the first, indeed, ever to double the stormy headland of the Cape.

But it was not until the people of India began to petition and the merchants of London to clamour for the adoption of steam-power in the Indian navigation that the conservative old magnates of John Company were stimulated into action. Mr Waghorn's Overland Route had almost entirely superseded the sea-voyage by way of the Cape; but the want of an efficient packet service between London and Alexandria, and Suez and Bombay, was greatly felt. Accordingly, in December 1836, the steamship 'Atalanta' was despatched from Falmouth to ply on the Indian side of the route. She was a vessel of 630 tons burden, with engines of 210 horse-power, and was built at Blackwall by the once famous firm of Wigram and Green. The orders of Captain Campbell, who commanded her, were that he was to steam the whole distance, only resorting to sail-power in case of a failure of machinery, in order fully to test the superiority of the marine engine over canvas. She sustained an average speed of about eight knots an hour during the entire passage, and but for her repeated stoppages would undoubtedly have accomplished the quickest voyage yet made to India. She was followed, in March 1837, by the 'Bernice,' of 680 tons and 230 horse-power. This vessel, which likewise made the run without the assistance of her sails, left Falmouth on March 17th, and arrived at Bombay on the 13th of June. As the race between the 'Sirius' and the 'Great Western' may be said to have inaugurated the steam-navigation of the Atlantic, so did the voyages of the 'Atalanta' and 'Bernice' first establish regular communication by steamers between Great Britain and India. True, there had been desultory efforts of enterprise prior to this time, and the pioneer of the Peninsular and Oriental steamers, the 'Royal Tar,' had sailed some three years before; but there was no continual service. The London *Times* of November 11, 1838, pointed out the approaching change. 'Scarcely,' it says, 'has the wonder created in the world by the appearance of the "Great Western" and "British Queen" begun to subside, when we are again called upon to admire the rapid strides of enterprise by the notice of an iron steamship, the first of a line of steamers to ply between England and Calcutta, to be called the "Queen of the East," 2618 tons, and 600 horse-power. This magnificent vessel is designed by Mr W. D. Holmes, engineer to the Bengal Steam Committee, for a communication between England and India. Great praise is due to Captain Barber, late of the Honourable East India Company's service, the agent in London for the Steam Committee in Bengal, who has given every encouragement to Mr Holmes in carrying forward his splendid undertaking. When these vessels are ready, we understand the voyage between Falmouth and Calcutta will be made in thirty days.'

From this time ocean steamers multiplied rapidly. One after another of the now famous shipping firms sprang up, beginning with the Cunard, and Peninsular and Oriental lines. The first British steamship was registered at London in the year 1814: in 1842 there were 940 steamers registered; and already was the decay of the sailing-ship so largely anticipated, that Mr Sydney Herbert, in a Committee of the House of Commons, had this same year pointed out 'that the introduction of steamers, and the consequent displacement of the Leith smacks, Margate boys, &c., would diminish the nursery for seamen by lessening the number of sailing-vessels.'

STARVED!

A REMINISCENCE OF AN ENGLISH SPRING.

'May 12, 1886, STARVED!'—Why starved? What is the meaning of this? A friend is examining a series of skins of the Swallow family, which I have just laid out for his inspection, and such is the question he puts, on reading the labels attached to them.

Don't you remember?—But no; you were in the 'south' at the time, and of course saw little or nothing of that terrible snow-storm which we, living on the English Borders, had in the middle of May. The effects will not be forgotten for a long time here. The skins of swallow, house-martin, and sand-martin, which are now lying before me, with the strange remark on the label, have a story to tell, which is, I think, worth recording. The extraordinary and variable winter of 1885-86 was followed by a spring quite as mutable, finishing with a storm in May, which in the wilder and more mountainous districts of the north of England will be referred to for many a year to come. Ere this, and despite all our climatic changes, our 'summer visitants' among the birds, true to that something which, for want of a better word, we call instinct, had arrived in their usual numbers; and the majority of them had already settled down in their nesting quarters, and begun those labours of perpetuating their species which they had travelled so many hundreds of miles to perform, when winter once more returned, taking full possession of the 'lap of May;' and, though its reign was short, yet it was quite long enough to cause such a fatality among the swallows as has never before been chronicled.

May was ushered in with a week of warm, balmy, and genial weather, the prevailing winds being from south and west, finishing on the 7th with a particularly fine hot day. The yet delicate and lacelike greenery which was decorating the trees and shrubs of our woods and copses, and is seen to the greatest advantage in spring, formed an enamelled bower for those migrant warblers to revel in, and their joyous, sweet songs rang through the woodland glades, as if in thankfulness for the safe accomplishment of their long and arduous journey. Above, the air was alive with the wheeling and twittering swallows and martins, revelling in the plenitude of their insect food. The next sunrise, however, changed all this, and the birds awoke to find the balmy south-breeze gone, and its place filled by

a cold east wind, accompanied with chill showers. This weather lasted for four days, each day getting colder and more bitter. No insects were to be seen during the prevalence of these cold winds; and on the 10th and 11th the swallows were first observed to be feeling the effects of cold and scarcity of subsistence. The birds had so overcome their natural timidity as to persistently seek the shelter—wherever they had the chance—of cottages, farmhouses, smithies, and other buildings; while the fishermen's huts were literally besieged by them; they would not be kept out, in their search for warmth.

Much sympathy was expressed for the poor birds, and every care was bestowed on them; but the heat merely to be found in houses was but a poor substitute for the want of food; and I am afraid the relief was in most cases but temporary. One which entered a cottage in an exhausted condition was carefully tended, and placed where it could receive the benefit of the warm hearth. After a short time it recovered, and took wing again, but only to make a couple of feeble turns round the humble dwelling, when it once more sought the friendly shelter, but this time only to die. Hardly had the last breath left the little body, and the film of death passed over its dark soft eyes, when something like a gray cloud seemed to spread outwards from the dead bird. This, on close examination, was found to consist of hundreds of parasites, which were already leaving the body, whence no more subsistence was to be drawn by them. How did these minute forms of life, which were only to be recognised by the aid of a pocket lens, know in such a short space of time that dissolution had taken place, and that the remains were no longer a home for them?

On the 11th the swallows were seen in many places huddled together in groups of a dozen to fifty, to protect themselves by their mutual warmth against the piercing nor'-easter. In one large group a continual motion was going on, the birds at the top fluttering to the bottom, and forcing their way in, which of course forced others out, and so the struggle was kept up. In some places they were seen to fall from the roofs into the streets dead, and in many instances were so weak as to be frequently blown away, tumbled over and over by the force of the gale.

On the 12th this severe weather culminated, on the 'Fells' and throughout the Lake District of Cumberland and Westmorland, in a snow-storm of unusual severity, the snow in many places lying nine inches thick on the level. In the lowlands, or inside—as the sturdy dwellers under the Helm Wind's ominous bar call the low-lying ground between them and the sea—a hurricane of sleet and rain, accompanied by a gale from the north-east, visited that part of the district. During this spell of weather, which an old jingle says is 'neither good for man nor beast'—it might have added bird as well—not an insect was seen; and the poor swallows, unused to get their food in any other fashion than by taking it on the wing, were being gradually starved. This was forcibly brought under my notice on the morning of the 12th. While crossing a bridge over a 'beck' in the north of Cumberland, my attention was

drawn to the slow, feeble, and tame-like flight of some swallows—so utterly unlike their usual rapid gyrations—as they were passing through from one end of the bridge to the other, returning each time in a more listless manner. My first impression was that they were sheltering from the icy gale; gradually it dawned on me that there was no 'feed' on the brook, as anglers would say, and that the birds were starving. This was confirmed when, after waiting a few minutes longer, one of the birds trying to turn at the end of its journey, dropped into the water, and, with outspread wings, was carried over a weir and so out of sight. Simultaneously, another came floating from underneath the bridge, followed by several others in the short time I was looking on. Not far distant, and at the time this was happening, dead birds were being picked up on the lawn in front of a gentleman's country seat, till in the course of a few hours no fewer than sixty were found!

I interviewed several of our local rural postmen in the evening, and they all had the same pitiful tale to tell. The roads on their rounds were all strewn with the dead and dying 'Hirundines.' On the 14th I visited Rockcliffe, on the river Eden, and beneath the cliffs the ground was covered with the dead birds—*Hirundo rustica*, *Chelidon urbica*, and *C. riparia*, being about equal in number. They occurred all the way up the water-edge. The destruction must have been immense. I dissected several of the birds, and found that the crop was in every case entirely empty—the cause of death really being starvation, accelerated by the intense cold. Most of them were in beautiful plumage, but otherwise skin and bone. They were lying mostly with their heads to the bank, some under grass tufts; others, in the holes where pebbles had dropped out of the boulder clay; and others, again, on sandstone ledges, which here and there occur on the face of the 'scaur.' The birds were all in the same position as if they had simply settled down, folded their wings, and gone to sleep. The 'bluff' faces south-west, and was therefore well sheltered from the chilling wind. Of course, in such a position insects would fly the longest, so the bitter struggle for existence might last longer here than in more exposed situations. When I say fly the longest, I mean that the nor'-easter did not kill the insects, only drove what was flying into shelter, and prevented others emerging from the aurelia state. This may, I think, be safely borne out by the fact that there was no great diminution in warblers and other insectivorous birds; although on the Fells, 'stonechatters'—a name often used locally for three different species, namely, wheatears, whinchats, and stonechats—were found lying on the snow with outstretched wings, as if they had dropped in the act of flying. In their case the food was thoroughly covered over, except what might be found in the interstices of the stone walls.

But the birds frequenting the woods and coppices did not seem to have suffered any inconvenience, for the same cause which deprived the swallow tribe of food, possibly gave them more, driving the insects to the shelter of the budding leaves, where the birds' sharp eyes and inquiring ways would soon find them out.

It was some days before the full extent of the

disaster became known; but kind correspondents all over Lakeland, and numerous friends who sent me newspaper cuttings from the local press in this part of North-west England, all confirmed the sad news of the enormous destruction of the swallow tribe. At Bassenthwaite Lake Station, a colony of sand-martins two hundred strong were picked up dead by the platelayers; and numbers were seen to fall to the ground, having been forced to succumb to the rigour of the weather. One correspondent, writing to a West Cumberland paper in the dialect of the district, said: 'It was a pitiable thing to see sec' a number o' swallows perishing in that storm. They wor fund in aw' kinds o' crevices aboot buildings, whoar they'd croppen in for sheltur, could an' still. Thoo-sands hev perished in this way fra' t' combeyned effects o' could an' want o' meat. For it's weel known these burds feed on t' wing; bit t' wind was seah strang they couldn't flee; an' than insecks warn't oot, an' they war deprived o' their food. Farmers an' gardeners are varry sworry for this, for they think 'at if a warm summer cooms, they'll be eaten up wid midge pests, an' hardly hev a single swallow t' help to lessen t' swarms. Ah know this, 'at they wad a gay bit rayder ha' seen some destruction amang t' sparrows, nor seen t' swallows destroyed.'

Hundreds of weakly lambs perished on the mountains; what must it, then, have been for the poor swallows, who fell by thousands? In the district round Annan, great numbers succumbed to the severe storm; many were found starved to death in cellars and other places where they had sought in vain for shelter from the biting atmosphere. Numerous instances were given of their entrance into houses, where they fell on the floor, too exhausted to be brought round by the kindly disposed. Near Plumpton, one man filled his hat with a cluster of perishing birds which had found shelter in some masonry. In a journey of thirty miles on the 20th, the writer did not see a single bird of the swallow kind; and the blank to one who has been accustomed to watch them with much interest was something indescribable. Many pleasant hours have I spent watching their marvellous flight, wheeling and gliding as they twist and turn in zigzag fashion, or flitting over the village pond, dipping in its placid water, and leaving dimpling circles on the surface of the pool, marking the course of their erratic gyrations; anon hovering above you for a second or two like miniature hawks, uttering all the while their soft twittering notes, whisking over the hedge into the green embowered lane, decked with flowering sprays of the woodbine and the rose. These 'guests of summer' lend an additional charm to the landscape. See them ascend to a considerable height above the tall elms, ceaselessly describing large, ever-varying circles round the tops of the trees, then descending like a rocket, with great velocity, a long, headlong dive, down, down, their plumage flashing in the sun—you would almost think they were going to dash themselves to pieces on the ground; then, with a sudden turn of the wings, darting off at a tangent, skimming away above the grasses in the flower-bespangled meadow till their infinite turnings and twistings are lost to view in the distance.

Often when sleepless, lying on my couch, anxiously waiting for morning, has the swallow's sweet little ditty, with its gurgling notes, cheered me from the eaves of my cottage; the birds keeping up the musical rhythm in a soft subdued tone, with slight intermission, for hours—now and then a low sweet prelude, gradually raising its song into a charming symphony. Frequently, too, in the dark, when everything else was hushed, the songsters seemingly waiting for the first gray streaks of dawn; but when the sun arises in all his splendour, they get more restless, and their notes are louder just before they dash down the village street to commence their labours for the day.

If 'dear old Gilbert White' had been living when this dire calamity happened to the swallow tribe, how he would have sorrowed and rejoiced over it—sorrowed that such a destruction should have taken place among his favourites—rejoiced that at last he could have settled that vexed question to him of their hibernation.

For some time after the storm not a bird of the swallow kind was to be seen; and only in a few villages bordering on the Solway did the swallow and house-martin ever appear to reach their usual numbers. The birds that filled up these vacant places must either have been later arrivals on their way farther north, who, finding plenty of room, stopped on their journey; or birds which were already in England, but had returned south, and so missed the storm. The first theory, I think, is the most plausible one, as it is well known that birds who go farthest north to breed are the last to arrive, and nesting quarters were not occupied in many cases till two or three weeks after—many, too many, unfortunately, never at all. Had the same birds come back, one would have expected to see them sooner than this.

Speaking generally, after repeated observations all over Lakeland, the 'gentle harbingers of summer' were conspicuous by their absence, and in the 'Fell dales' and villages in this part of North Cumberland, the summer of 1886 is still known and spoken of as the 'Swallowless Summer.'

A BUNCH OF WITHERED VIOLETS.

A BUNCH of withered violets!

I press them to my lips each day;
They bring before my tearful eyes
A vision that is far away.

Sweet dead memorials of a time

When Love was gracious unto me,
And all the bliss that earth could give
Seemed in this gift of flowers to be.

But now—why dwell upon the past?—

For some one else he cheers the hours;
I wonder does he ever think
That I still treasure his dead flowers?

WILLIAM COWAN.

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